

PATENT COOPERATION TRLATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 12 April 1999 (12.04.99)	
International application No. PCT/AU98/00582	Applicant's or agent's file reference
International filing date (day/month/year) 23 July 1998 (23.07.98)	Priority date (day/month/year) 24 July 1997 (24.07.97)
Applicant NAIR, Chenicheri, Hariharan et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:24 February 1999 (24.02.99)☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer S. Mafla
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

SLATTERY, John, M.
Davies Collison Cave
1 Little Collins Street
Melbourne, VIC 3000
AUSTRALIE

Date of mailing (day/month/year) 17 January 2000 (17.01.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference	
International application No. PCT/AU98/00582	International filing date (day/month/year) 23 July 1998 (23.07.98)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

THE AUSTRALIAN NATIONAL UNIVERSITY
Canberra, ACT 2000
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address

THE AUSTRALIAN NATIONAL UNIVERSITY
Acton, ACT 2601
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. De Michiel

Telephone No.: (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 98/00582

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl⁶: A61K 51/02, 51/12 G01N 33/60, 33/84

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC : A61K and keywords, G01N 33/- and keywords

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT (DERWENT) : (Carbon or Graphit:) and Fibrin: and (A61K or G01N 33/-)
CHEMICAL ABSTRACTS : (Carbon or Graphit?) and (layer? or mesh? or ?Encapsul?:) and Fibrin?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 93/15768 A (NYCOMED SALUTAR INC) 19 August 1993 page 6 line 8 to page 7 line 6, page 18 line 4 to page 19 line 22 page 29 lines 1 to 19	11-19 1-22
P, Y	Journal of Biomedical Materials Research, Volume 37, No. 1, issued November 1997 (John Wiley & Sons, Inc), H. Nygren and C. Eriksson, "The Initial Reactions of Graphite and Gold with Blood", pages 130-136 whole document	1-22

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

<p>* Special categories of cited documents:</p>		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
25 September 1998

Date of mailing of the international search report
30/sep/1998

Name and mailing address of the ISA/AU
AUSTRALIAN PATENT OFFICE
PO BOX 200
WODEN ACT 2606
AUSTRALIA
Facsimile No.: (02) 6285 3929

Authorized officer
A. Achilleos
ANDREW ACHILLEOS
Telephone No.: (02) 6283 2280

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 98/00582

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Biomaterials, Volume 8, No. 1, issued January 1987. (Butterworth & Co Ltd). E. Chigmier et al, "Haemocompatibility and Biological Course of Carbonaceous Composites for Cardiovascular Devices", pages 18-23 whole document	1-22
Y	Proc of the Thirty-Eighth Annual Meeting, Electron Microsc. Society Am., issued 1980, (EMSA), M.L. Rudee et al, "The interaction of Blood with Amorphous Carbon", pages 584-5 whole document	1-22

Information on patent family members

**International application No.
PCT/AU 98/00582**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	93/15768	AU	35068/93	EP	625055	GB	9203037
		US	5688486				

END OF ANNEX

PATENT COÖPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 10 SEP 1999

WIPO PCT

07/463082

Applicant's or agent's file reference 2079801/AXD/ML		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU 98/00582	International filing date (day/month/year) 23 July 1998	Priority Date (day/month/year) 24 July 1997	
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁶ A61K 51/02, 51/12, G01N 33/60, 33/84			
Applicant 1. THE AUSTRALIAN NATIONAL UNIVERSITY et al.			

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																								
2.	<p>This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheet(s).</p>																								
3.	<p>This report contains indications relating to the following items:</p> <table border="0"> <tr> <td>I</td> <td><input checked="" type="checkbox"/></td> <td>Basis of the report</td> </tr> <tr> <td>II</td> <td><input type="checkbox"/></td> <td>Priority</td> </tr> <tr> <td>III</td> <td><input type="checkbox"/></td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td><input type="checkbox"/></td> <td>Lack of unity of invention</td> </tr> <tr> <td>V</td> <td><input checked="" type="checkbox"/></td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td><input type="checkbox"/></td> <td>Certain documents cited</td> </tr> <tr> <td>VII</td> <td><input type="checkbox"/></td> <td>Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td><input type="checkbox"/></td> <td>Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/>	Basis of the report	II	<input type="checkbox"/>	Priority	III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/>	Lack of unity of invention	V	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/>	Certain documents cited	VII	<input type="checkbox"/>	Certain defects in the international application	VIII	<input type="checkbox"/>	Certain observations on the international application
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VII	<input type="checkbox"/>	Certain defects in the international application																							
VIII	<input type="checkbox"/>	Certain observations on the international application																							

Date of submission of the demand 24 February 1999	Date of completion of the report 30 August 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (02) 6285 3929	Authorized Officer STEVEN CHEW Telephone No. (02) 6283 2248

I. Basis of the report**1. With regard to the elements of the international application:***

- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of .
- ☐ the claims, pages , as originally filed,
 pages , as amended (together with any statement) under Article 19,
 pages , filed with the demand,
 pages , filed with the letter of .
- ☐ the drawings, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of .
- ☐ the sequence listing part of the description:
 pages , as originally filed
 pages , filed with the demand
 pages , filed with the letter of .

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	YES
	Claims 1-22	NO
Inventive step (IS)	Claims	YES
	Claims 1-22	NO
Industrial applicability (IA)	Claims 1-22	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)Novelty (N): Claims 1-22

WO 93/15768-Document 1

Biomaterials Vol. 8(1) 1987, E. Chigmier et al-Document 2

Electron Microscopy Society of America, M.L. Rudee et al-Document 3

NEW CITATION

X, AU 48324/85 A (TETLEYMANUFACTURING PTY. LTD) 10 April 1986-Document 4

Whole document

Your independent claims 1, 2, 11 and 20 all define the reagent particles, which include a plurality of layers of carbon, as being capable of binding to fibrin. This term does not place any real limitations on the scope or ambit of the claims other than the particles must at least be suitable for that use. For example, claim 1 comprises the method steps of administering the reagent particles to a patient and detecting the presence of a detectable marker enclosed therein.

The reagent particles might be capable of binding to fibrin but the method of claim 1 does not include the step of actually binding fibrin in its scope. Claims 1, 2 and 11 would therefore be anticipated by Document 4 which discloses administering the particles of your invention to a patient to diagnose airway dysfunction.

Document 1 discloses the use of carbon allotropes and other analogous reticulate molecular structures as basic structural components for diagnostic or therapeutic agents, these are defined in claim 1. Page 5 lines 12 to 21 disclose graphite and amorphous carbon as being said carbon allotropes. Page 6 line 8 to page 7 line 6 discloses the use of said carbon allotropes in entrapping diagnostic or therapeutic entities directly or indirectly attached to the carbon skeleton. These uses are further disclosed at page 23 lines 3 to 8 and page 15 last paragraph. Therefore the subject matter of claims 1, 2, 11 and 20 is anticipated by Document 1.

Documents 2 and 3 disclose that certain types of carbon react with blood. Document 3 discloses the interaction of blood with amorphous carbon. It was found that after exposing the carbon to blood for 5 seconds a layer of native fibrinogen was deposited, 5mm thick. Document 2 discloses the deposition of fibrin onto pieces of a prepared carbon-carbon composite material of dimensions length 3mm and width 5mm (page 18 column 2 to page 19 column 2, the materials section). The deposition is disclosed in the results section page 21 column 1 lines 1 to 16.

These documents suggest that the binding of certain types of carbon to fibrin or fibrinogen is well known in the art. It would probably be common general knowledge. Reading Document 1 or 4 in light of this common general knowledge would anticipate your invention.

(Continued)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of :V

Inventive Step (IS): Claims 1-22

When the disclosure of Documents 2 and /or 3 are combined with the disclosure of Documents 1 and/or 4, as would be obvious to a person skilled in the art, all of your features of the claims are disclosed. Your claims 1-22 therefore do not involve an inventive step.